

This listing of claims replaces all prior versions and listings of claims in the application.

In the Claims:

1. (currently amended) A bipolar transistor, comprising:

a collector region;

an intrinsic base layer overlying said collector region, said intrinsic base layer including a single-crystal semiconductor;

an emitter disposed within a first opening overlying said intrinsic base layer;

a raised extrinsic base, including:

a raised extrinsic base layer overlying said intrinsic base layer; and

a link-up region electrically connecting said raised extrinsic base layer to said intrinsic base layer, said link-up region self-aligning said raised extrinsic base to said emitter, said link-up region disposed in a second opening oriented in a vertical direction substantially perpendicular to said intrinsic base layer and separate from said first opening and in an undercut region extending horizontally outward from said second opening below said raised extrinsic base layer in a first direction towards said emitter.

2. (canceled)

3. (currently amended) A bipolar transistor as claimed in claim-2_1, wherein said second opening surrounds said emitter and has annular shape, wherein said undercut

region further extends horizontally outward from said second opening in a second direction away from said emitter.

4. (currently amended) A bipolar transistor, comprising:

a collector region;

an intrinsic base layer overlying said collector region, said intrinsic base layer including a single-crystal semiconductor;

an emitter disposed within a first opening overlying said intrinsic base layer;

a raised extrinsic base, including:

a raised extrinsic base layer overlying said intrinsic base layer; and

a link-up region electrically connecting said raised extrinsic base layer to said intrinsic base layer, said link-up region self-aligning said raised extrinsic base to said emitter, said link-up region disposed in a second opening separate from said first opening and in an undercut region extending from said second opening below said raised extrinsic base layer. ~~A bipolar transistor as claimed in claim 1,~~ wherein said raised extrinsic base layer includes an inner portion disposed adjacent to said emitter and an outer portion opposite said second opening from said inner portion, wherein said link-up region electrically connects said inner portion to said outer portion.

5. (original) A bipolar transistor as claimed in claim 4, further comprising a dielectric spacer disposed on a sidewall of said inner portion of said raised extrinsic base layer

and of said link-up region, such that said inner portion and said link-up region are spaced from said emitter by a width of said spacer.

6. (original) A bipolar transistor as claimed in claim 5, wherein said dielectric spacer includes an oxide spacer contacting a sidewall of said raised extrinsic base layer and a nitride spacer overlying said oxide spacer, said emitter contacting a sidewall of said oxide spacer.

7. (original) A bipolar transistor as claimed in claim 1, wherein said link-up region includes at least one material selected from the group consisting of doped semiconductors, metals and metal silicides.

8. (original) A bipolar transistor as claimed in claim 1 wherein said raised extrinsic base layer includes a layer of a polycrystalline semiconductor and a low resistance layer overlying said polycrystalline semiconductor layer, said low resistance layer including at least one material selected from metals and metal silicides.

9. (original) A heterojunction bipolar transistor (HBT) having a structure as claimed in claim 1, wherein said single-crystal semiconductor includes a semiconductor alloy, such that said intrinsic base layer forms a heterojunction with at least said collector region.

10. (original) An HBT as claimed in claim 9, wherein said semiconductor alloy consists essentially of silicon germanium.

11-23. (canceled)